Cleanroom Control Systems Improve Performance

Howard Abramowitz
AirCare Automation Inc.
www.aircareautomation.com
Phone: 855-234-9237
Information: info@aircareautomation.com

Fostering Revolutionary Thinking
ESTECH™ 2015

Cleanroom Controls - Overview

Centralized controls provide environment **monitoring** and **control** that can regulate and automatically adjust the clean-air cycling speed.

MONITOR

Sensor readings,
particle counters ,
pressure , temp. , humidity
Occupancy sensors
RPM ‚air-flow' motor functionality

CONTROL

Adjust FFU speeds for proper air flow
Return air for proper pressure control
Closed loop Control of particulates or pressure
Stand-by feature for energy savings
Lighting Control

BENEFITS: Improved Maintenance Monitoring;
Higher Throughput Yield;
Lower Energy Consumption;
Sensors & Control on one System.

When Cleanroom Compliance is not enough

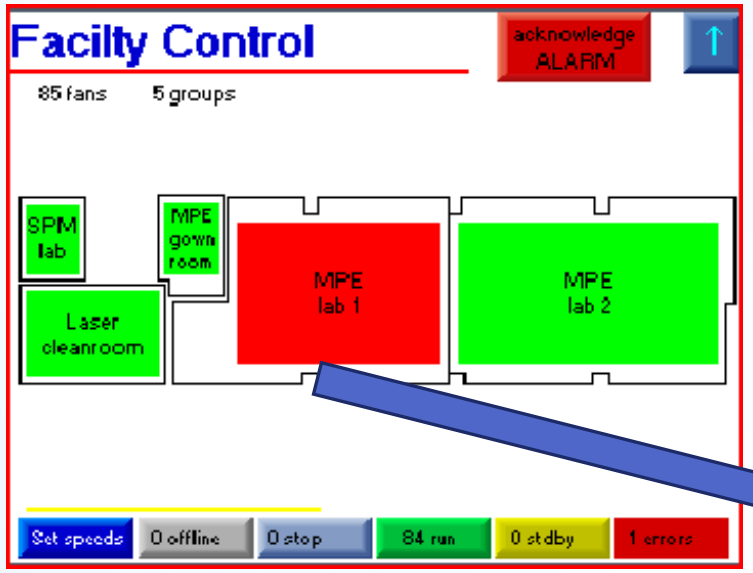
* MONITOR
  * FFU performance
  * Occupancy and Cleanroom Performance demands
  * Critical room parameters (air-flow, air-exchanges, pressure, particle counts etc.)
  * Capture and store measurements
* CONTROL
  * Adjust FFU speed (stay compliant, optimize cleanroom performance)
  * Set-Back (clock-calendar unoccupied reduction)
  * Occupancy and Facility loading adjustments
  * Facility Integration (interface with Building Management System)

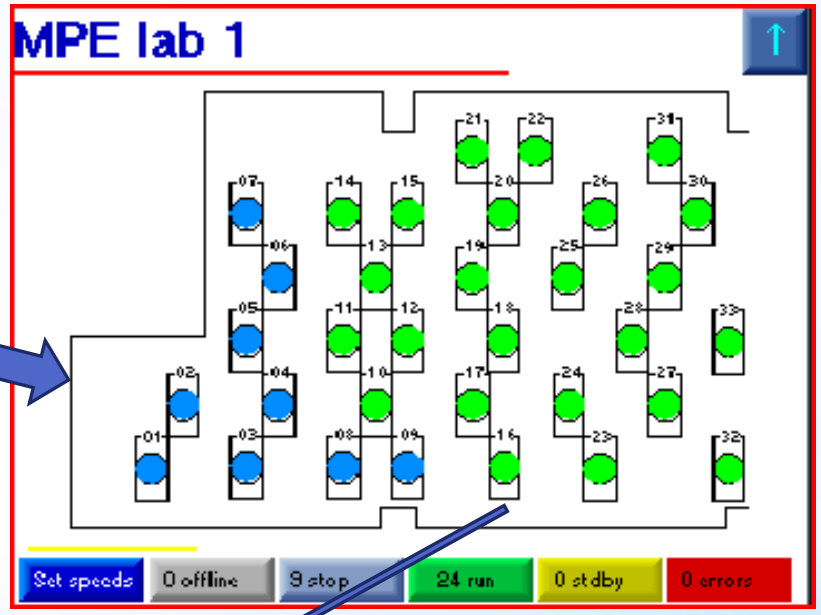
RESULTS - *reduce down-time, improve yields, energy conservation*

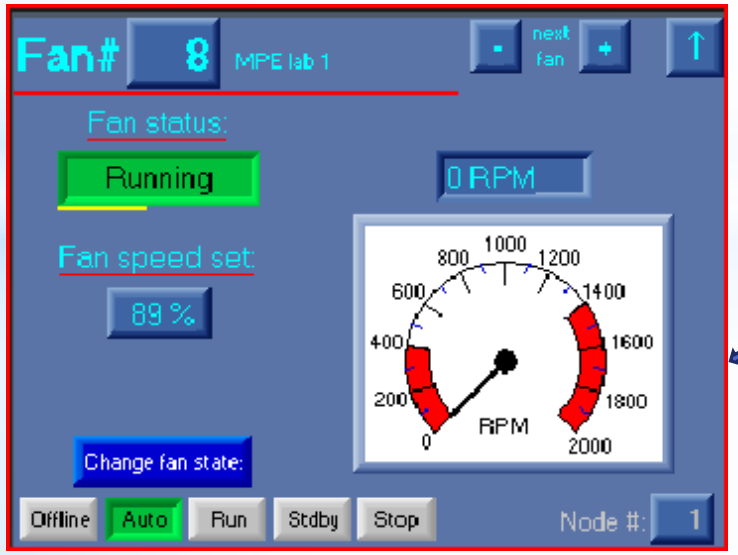
Control Systems - Popular Features

1. Global->Unit views/control Facility/Group/ Individual
2. Clock/Calendar Set-Back
3. Remote Set-Back, override
4. Emergency Shut-Down
5. Alarm
    1. Local alarm on Console
    2. Remote Alarm trigger
    3. Fault notification (sms text or e-mail)
6. Pressure Monitoring
7. Temperature/Humidity monitoring
8. Closed Loop Control
9. Particle Counter integration
10. Building Management Coordination
11. Data Logging

View and Control Levels

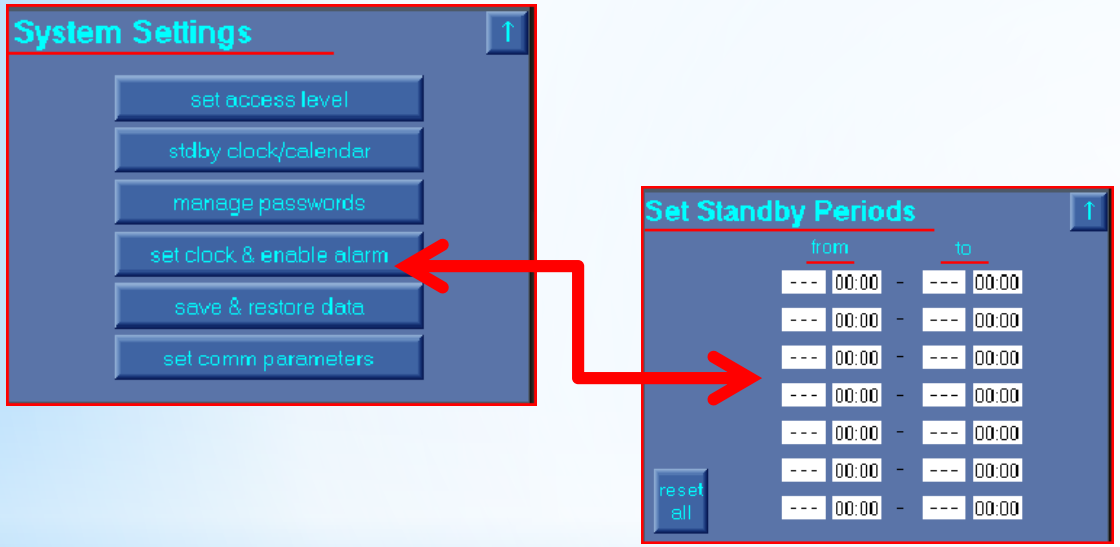




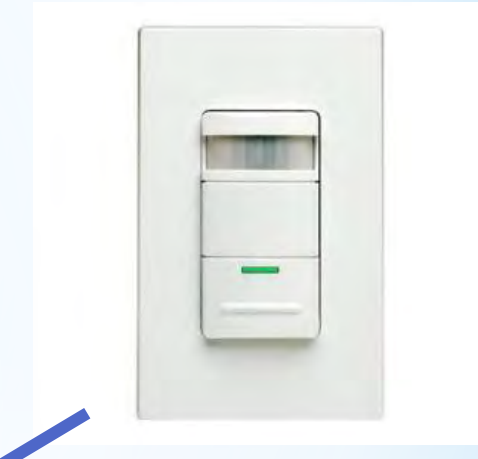


Set-Back for Energy Savings

Automatic Adjustment Clock/Calendar



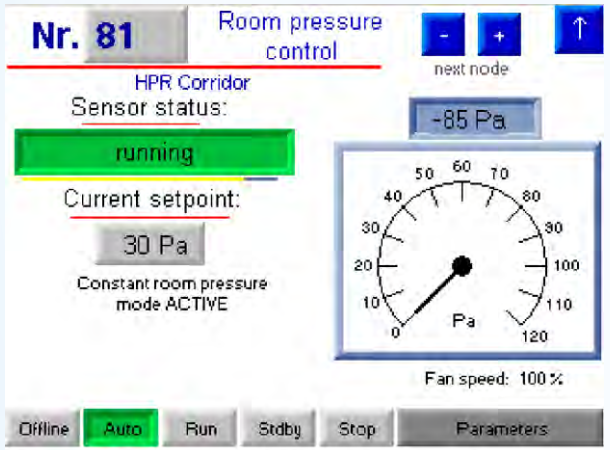
Occupancy Sensor Adjustment

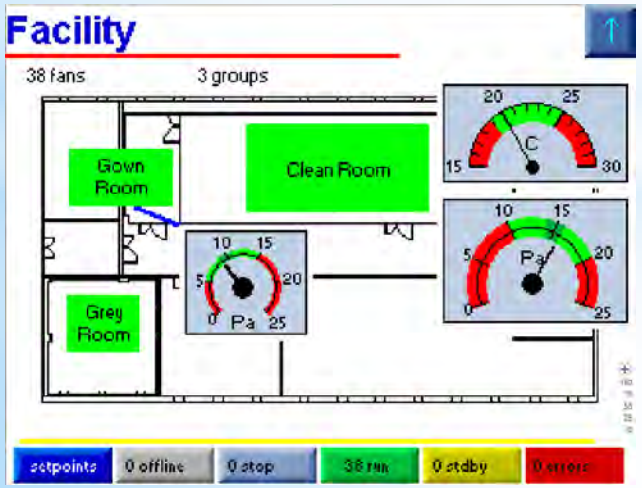


SET-Back

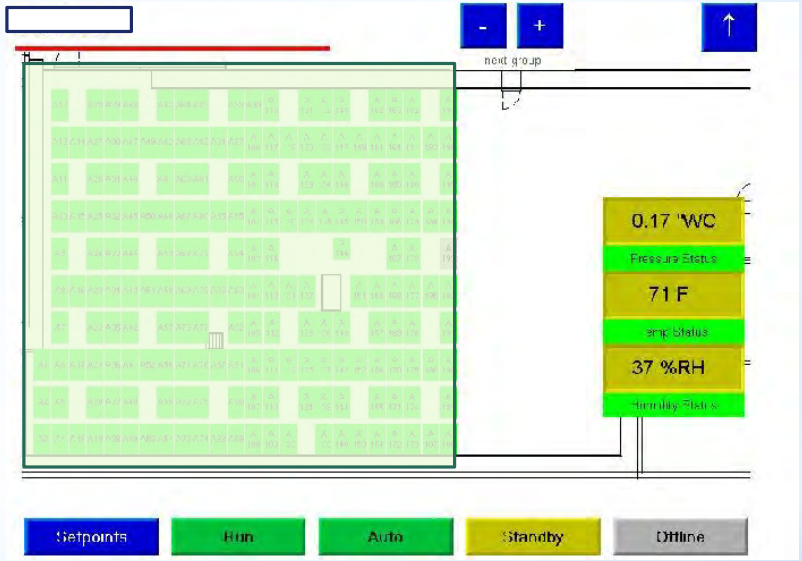
SENSOR Monitoring

Individual Sensor Views (pressure)

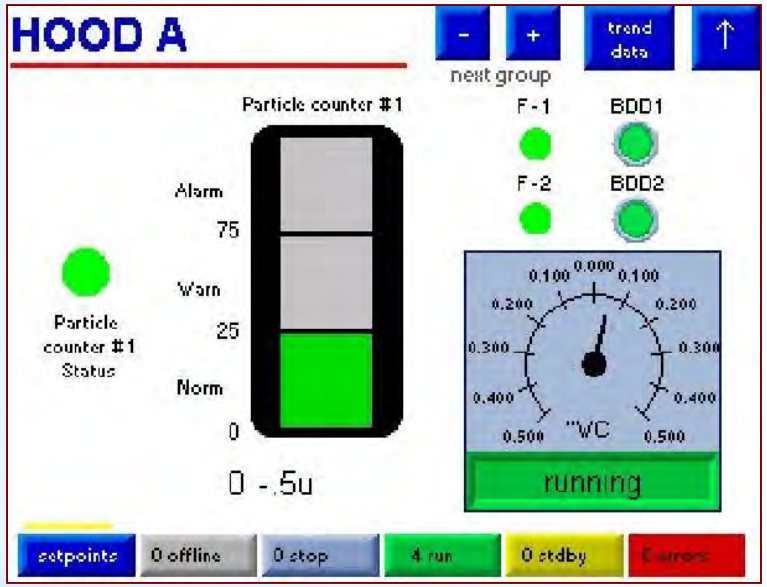


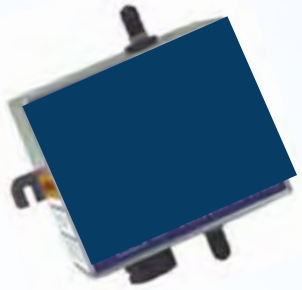


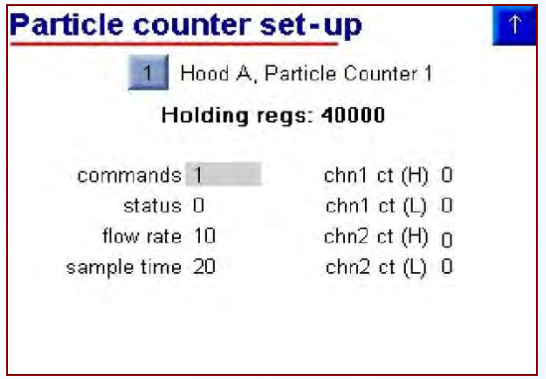
Multiple Sensor Display (group view)

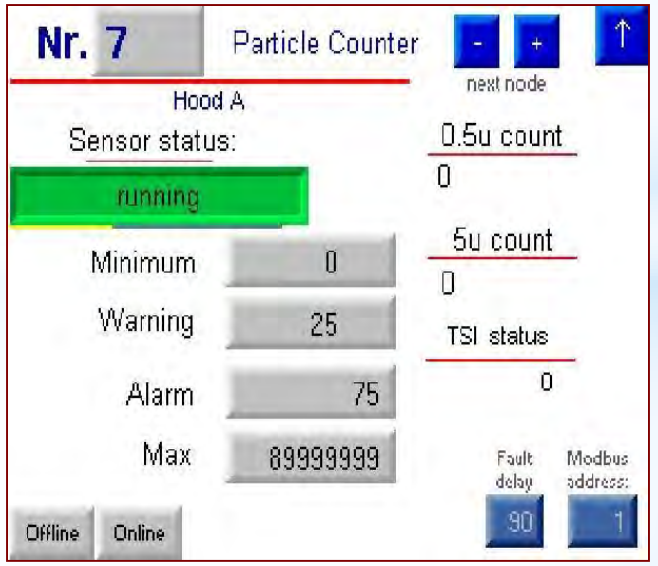


Particle Counters



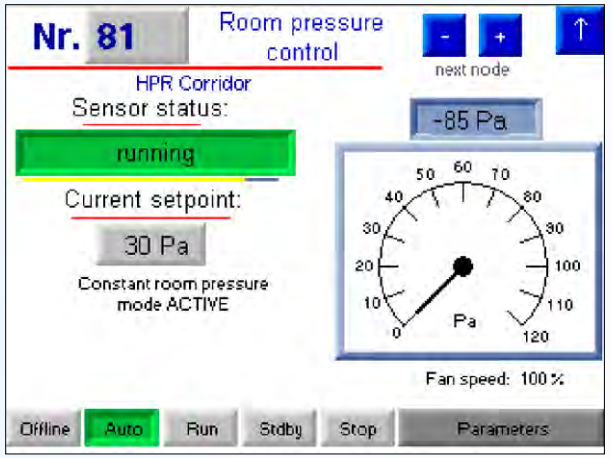


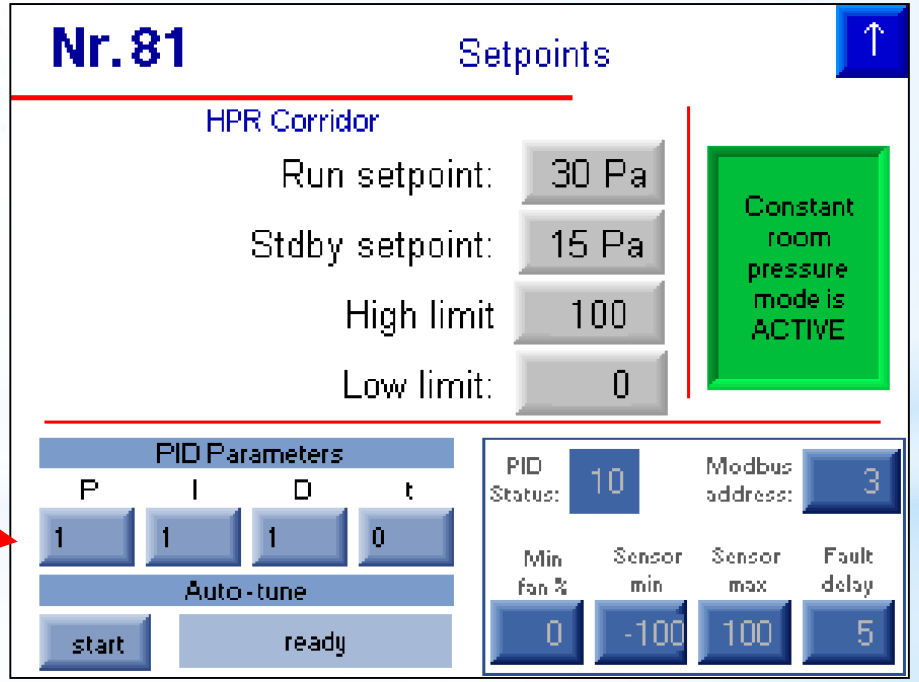




Automatic Control Mode

Closed Loop Control





Building Management Coordination

PC (or BMS)

Ethernet

Ethernet Info Exchange

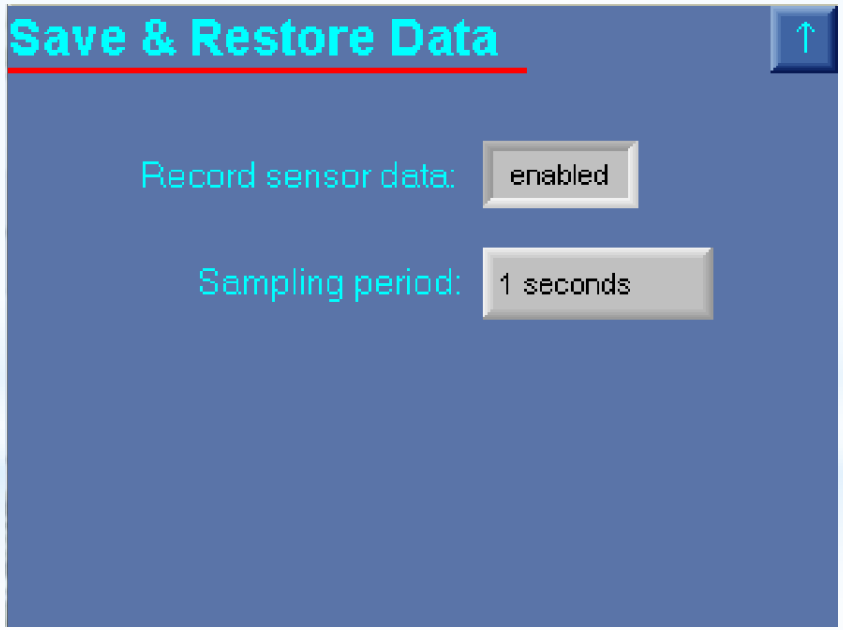
FFU Daisy Chain

Information Available:
RPM of FFU
Sensor
Fault conditions of FFU
Setpoint of FFU

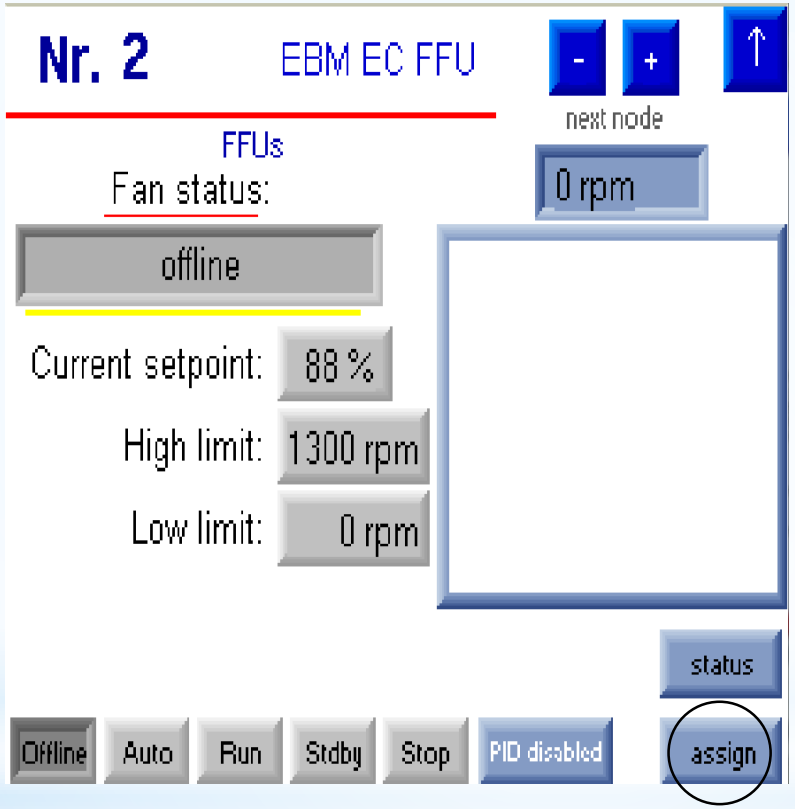
CLEANROOM

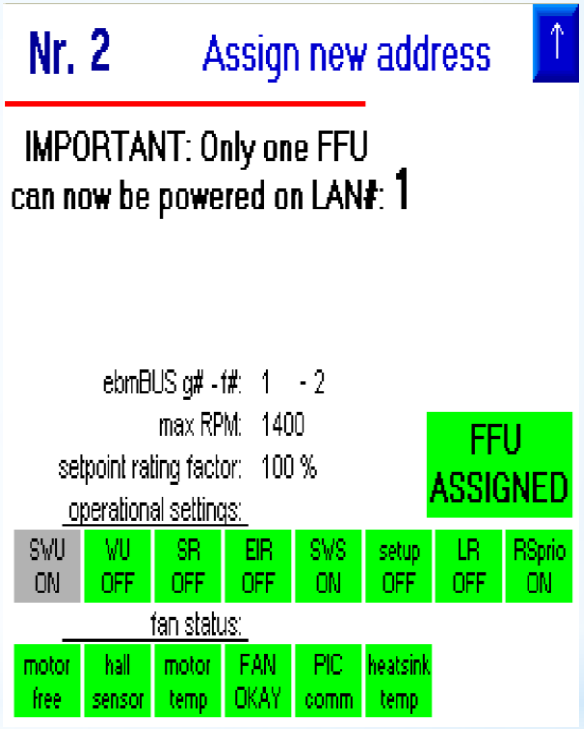
*Data Logging/Recording

Data from the sensors (or FFU units) can be recorded to the SD card installed in the ACC70xx and transferred for analysis



Set-Up assistance (i.e. ebm fan assign address)





Example - AirCare Automation Selector Guide

ACC7XXX Series Capabilites

	LANs	MAX # OF FFUs .	MAX # OF GROUPs .	ETHERNET	DOOR INTERLOCK	CLOCK CALENDER	DATA LOGGING	LIGHTING	REMOTE SETBACK	OCCUPANCY SENSING	ALARM OUTPUT TO BMS.	CLOSED LOOP	ANALOG SENSOR	PARTICLE COUNT	ANIMATED CEILING GRID	FACILITY OPTIMIZATION
ACC7001 2 Line LCD	1	90	3		•				•	•	•		•			
ACC7002 2 Line LCD	1	25	1		•				•	•	•	•	•			
ACC7020 2.4" Graphic Display	1	200	25		•	•		•	•	•	•		•			•
ACC7022 2.4" Graphic Display	1	200	25	•	•	•		•	•	•	•		•			•
ACC7050 5.7" Touchscreen Display, no I/O	2	400	50		•	•									•	•
ACC7052 5.7" Touchscreen Display	2	400	50	•	•	•	•	•	•	•	•	•	•	•	•	•
ACC7152 12.1" Touchscreen Display	2	400	50	•	•	•	•	•	•	•	•	•	•	•	•	•

Cleanroom Controls - Summary

* Consolidate monitoring onto one common platform
* Measure and record critical data
* Advance warning for pending performance changes and issues
* Control and Adjust FFU units to maintain cleanroom performance
* Optimize performance to meet specific facility targets
* Reduce Energy consumption when possible

** ENVIRONMENTAL MONITORING*

** ADJUSTMENT IN REAL TIME*

** CLEANROOM CONTROL*

** PERFORMANCE OPTIMIZATION*

RESULTS *- Reduced down-time, Improved yields, Energy conservation*

Thank You

Cleanroom Control Systems Improve Performance

Howard Abramowitz
AirCare Automation Inc.
www.aircareautomation.com
Phone: 855-234-9237
Information: info@aircareautomation.com